DECEMBER • 1958

FIREMEN

VOLUME 28, NUMBER 12, COPYRIGHT 1958 NATIONAL FIRE PROTECTION ASSOCIATION PRINTED IN U. S. A.

Incident at Idlewild — *see page 8*

TIONAL FIRE
OTECTION
SOCIATION

63rd
year

MOUTH TO MOUTH RESUSCITATION › › › Page 10

"THE SELF-PROPELLERS" › › › › › › › › › Page 14

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729-R	2½" for P.P.	240-120	91.65	99.15
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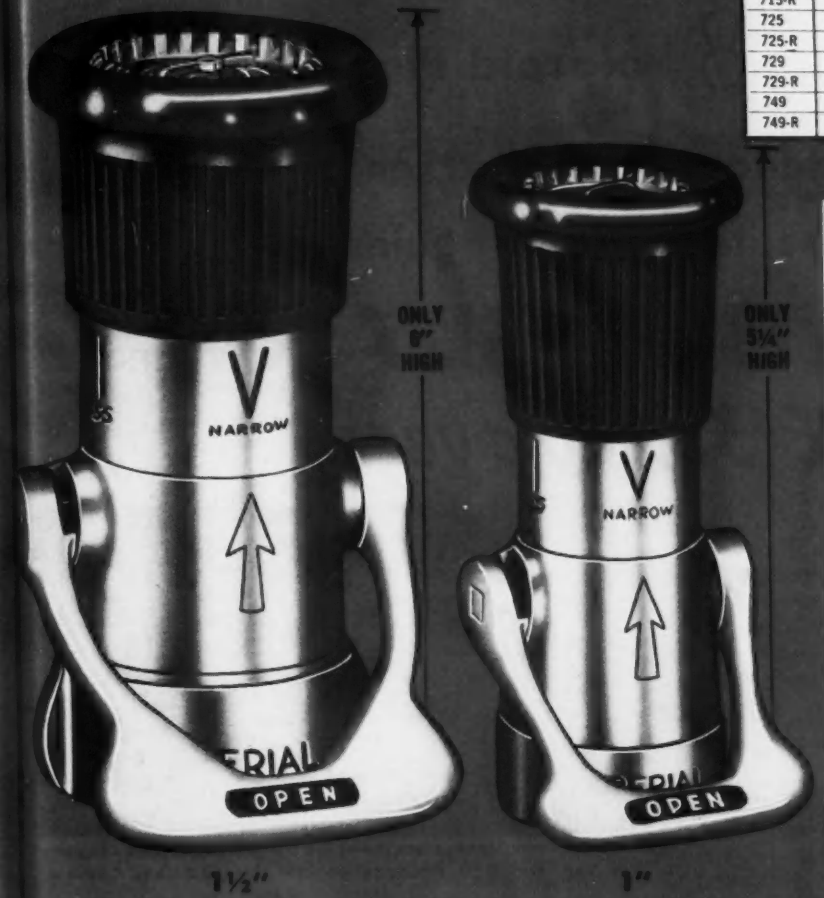
749-R	2½" with P.P.	240-120	116.75	130.50

*Rigid Base **Play Pipe



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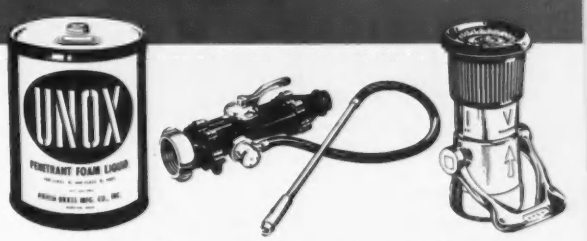

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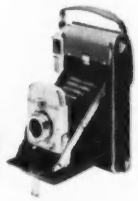

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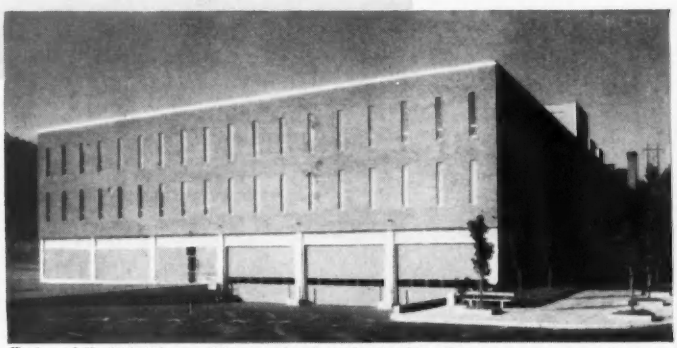

Polaroid's Waltham, Mass. plant, selected by Factory as one of country's "Top Ten" for 1958. Photo taken with Polaroid Land Camera.

"Automatic protection for our eight plants in the Boston-Cambridge area has given us a high degree of security, with a saving of $32,000 a year in watch expense," says Edward Dubois, Supervisor, Building Services and Security.

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FIREMEN

Volume 25 • Number 12

A monthly magazine published for the fire service members of the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

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The NFPA Fire Record Department has completed a study of Christmas tree fires in the United States during 1957. With 472 cities reporting, the figures show that during 1957 there were approximately 700 Christmas tree fires causing a total loss of over $350,000. As mentioned in last month's issue there has been a steady decrease in these fires since 1951 but every fire fighter realizes that Christmas trees still are a significant hazard and that the public needs constant reminders on this point. As a special service to fire departments, the NFPA has prepared the television slide illustrated at right together with a series of public service announcements on Christmas fire safety. The slides are available at $2.00 each and a set of announcements will be sent free to fire departments on request. It would be useful to call the slide and announcements to the attention of program directors of radio and television stations. Orders should be sent promptly to the Sparky Christmas Project, NFPA Publications Department, 60 Batterymarch Street, Boston 10, Massachusetts.

Recently the fire trucks and equipment of some rural volunteer fire departments were found to be in a dirty, slipshod condition. Even though the weather was good, mud was on the tires and dirt was on the trucks. Hose was not cleaned or rolled. Such neglect leads an observer to wonder whether the equipment is in condition to operate properly at a fire.

It is appreciated that volunteer firemen may give their time to fighting a fire and are anxious to get back to their regular work or to go home as soon as the fire is out. However, such disregard for the condition of equipment is contrary to the tradition of the fire service. It has always been the requirement of every well-run fire department that the first job to be done after the fire is out is to take care of the equipment, making sure that everything is in place, and getting the apparatus and all appliances ready for the next run as quickly as possible.

Equipment which is clean resists deterioration and lasts longer. In the process of washing and cleaning, small defects may be spotted and can be repaired before serious deterioration sets in or failure occurs at a fire. Snags on hose, loose couplings, or those that do not spin easily, poor or missing gaskets, and tire cuts or bruises will be noted.

Any good fire department washes road dirt and mud off the apparatus after each run as necessary. Hose is changed and the wet hose is dried properly. (See NFPA Standard 198.) The booster tank is filled, and the gasoline supply and fuel oil level are checked. Even in paid departments where polishing of the apparatus is done on the day shift, dirt is hosed off by the house line which may also be used to fill the booster.

Many volunteer departments have employed house men to take care of the station and keep the apparatus in good condition and appearance so that it will be a credit to the department. Even so, every member should make certain that apparatus and equipment is in top condition. This also helps when the time comes to raise funds for new apparatus. Who wants to support a fire department that neglects its equipment?

Wide World Photo

IDLEWILD AIRPORT, QUEENS, NEW YORK, NOVEMBER 10. Major loss of life by fire in this incident probably was averted by three important factors. First, a TCA Viscount happened to be in the way of a Seaboard and Western Constellation on a pilot training flight that had ground-looped during takeoff and swerved toward a terminal building. Second, Idlewild is one of the few major U.S. airports that has the suggested fire protection equipment recommended by NFPA No. 403. Third, responding fire fighters acted quickly, aggressively, and correctly in applying foam to the involved aircraft permitting safe evacuation of crew members.

Shortly after 11 a.m. the Constellation had difficulty during take-off. It ground-looped toward the left, crossed an open area, caught fire, and shot toward the temporary terminal building where the Viscount was getting ready for passengers. The impact pushed the two planes within 20 feet of the building preventing access for fire fighting from this side. There were about 25 persons inside the baggage pickup area near where the Viscount was parked and it was estimated that hundreds of persons were inside the terminal building.

Heavy fire developed immediately after impact. The control tower called the airport fire apparatus positioned outside of the airport station just 400 ft. away. An alarm was also sent immediately to the Queens headquarters of the New York City Fire Department. Four pieces of airport apparatus and 11 units of the city fire department responded quickly to these alarms. It was reported that the Airport brigade used 892 of its 1,150 drums of foam to complete extinguishment. The five-member crew of the Constellation escaped just as fire fighters were applying foam on both planes. Crew members of the Viscount had managed to evacuate safely before the collision.

TWO AIRPORT INCIDENTS

WASHINGTON NATIONAL AIRPORT, WASHINGTON, D. C., SEPTEMBER 21. Airport fire fighters were ready for this United Airlines DC-7 returning to the Washington National Airport with a runaway propeller. The plane had 58 passengers and a crew of five aboard and as it came in, magnesium in the Number 4 engine was burning violently despite the fact that the pilot had activated the engine fire extinguishing system. The control tower, in addition to alerting the airport units, called for equipment from the Arlington County Fire Department and additional foam units from nearby Bowling Field and Anacostia Naval Air Station.

Paul Schmak Photos

As soon as the plane stopped, fire fighters directed foam from turrets and hand lines into the front of the burning engine. In the meantime, two passengers had escaped by rope on the opposite side of the plane and one report stated that a few more passengers slid down an escape chute which had been thrown out from the cabin door. Members of the airport fire department placed their emergency steps into position and the majority of passengers escaped by this means within three minutes. Two of these collapsible emergency steps are carried on the airport apparatus.

Fire fighting started approximately one minute after the plane touched down but despite the heavy application of foam, flame and magnesium sparks kept erupting from the engine. Approximately 10 or 12 minutes after the application of foam had started, the engine burned loose from its supports and dropped to the runway. Fire fighters attached a winch cable to the hub of the propeller and pulled the engine to an open area where it burned harmlessly. Meantime, foam application was continued on the burning wing to prevent the spread of fire. The fire was under control in about 20 minutes and complete extinguishment was made about 50 minutes after touchdown. The only persons injured were the two passengers who suffered rope burns when they slid down the rope to safety.

A Survey of

Fire Protection in Industry

A SURVEY conducted by *Mill and Factory*, a Conover-Mast publication, brought some interesting statistics on the extent of fire protection and fire brigade training in industry. Published in the October, 1958, issue of the magazine, it states that 338 industrial firms of all types and sizes replied to the selected questions. The majority of respondents, 91 per cent, have a fire protection program in their plants, handled by specially trained personnel according to 74 per cent. About half of the firms replying conduct regular fire drills chiefly on a monthly basis.

While fire protection requirements vary according to the types of structures, processes and materials in these plants, some of the figures reported below could be significant to municipal fire departments responsible for protecting the plants. For example, it will be noted that nine per cent of the responding plants did not have any fire protection program. Possibly another significant figure is the 39 per cent that had not organized production workers into fire brigades. Then there is the fact that 51 per cent of the respondents stated that their company did not participate in regular fire drills. In certain types of industrial buildings, this could be quite important from a life safety point of view, particularly if fire protection in the structure was deficient.

As pointed out in NFPA Standard No. 27 — "Suggestions for the Organization, Training, and Equipment of Private Fire Brigades" — in all industrial plants regardless of size, there are certain things to be done in case of fire or as fire prevention measures, such as:

Operation of first-aid fire appliances.

Housekeeping routines (disposal of wiping rags and waste, handling of packing materials, maintenance of aisle space and order so that access for fighting and evacuation of employees is possible).

Monitoring an exit drill plan, with exit guards, room searchers and other personnel assigned to specific duties.

Dealing, in case of fire, with processes and machinery which operate continuously.

Safeguarding, in case of fire, important records, stock or finished products.

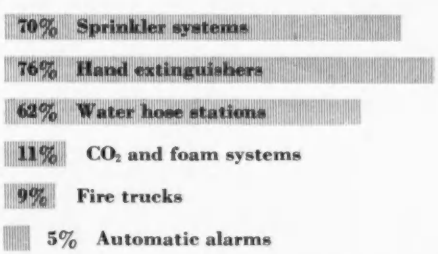
Informing new employees of plant and departmental practices which have been adopted for fire safety and checking on the observance of these practices.

Copies of NFPA Standard No. 27 can be obtained for 35 cents each. Other publications useful for industry are "Employee Organization for Fire Safety" and the Industrial Fire Brigades Training Manual. A complete list of NFPA publications is available free on request.

Do you have a fire protection program in your company?

If so, is fire protection handled by specially trained personnel?

Which of the following protective equipment does your firm use?

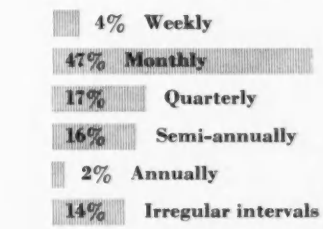


(Note: Above total more than 100% because respondents checked several answers.)

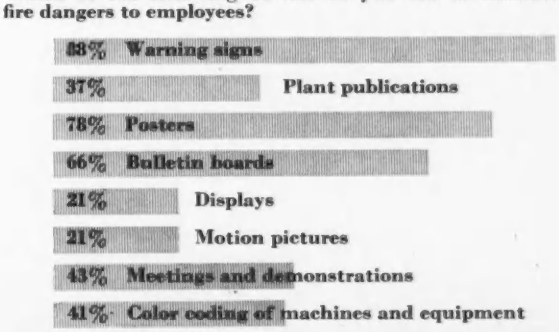
Have you organized your production workers into fire brigades?

Does your company participate in regular fire drills?

If so, how often are such drills and practices held?



Which of the following devices do you use to indicate fire dangers to employees?



(Note: Above total more than 100% because respondents checked several answers.)

AN IMPORTANT STATEMENT ON

MOUTH TO MOUTH RESUSCITATION

by Dr. William D. Claudy, member Board of Fire and Police Surgeons, Washington, D. C.

Author of the book "Respiratory Hazards of the Fire Service" and a frequent contributor to FIREMEN *Magazine, Dr. Claudy has studied fire fighting problems and operations for many years. For the past two years he has given his attention to mouth-to-mouth resuscitation, as this article shows. As a result he has recommended that the Washington, D. C., Fire and Police Departments adopt this method and that all emergency vehicles be equipped with the Safar airway. The Board of Fire and Police Surgeons approved the recommendation on October 14, 1958.*

ALTHOUGH man has always been interested in the resuscitation of the unconscious and nonbreathing patient it was not until 1857 that the first of the so-called modern methods (Sylvester) was introduced. This method was advocated until 1903 when it was replaced by the Schaefer prone pressure method. For the following 48 years this method was blindly accepted as "the best" but in 1951, following an extensive experimental study by Dr. Archer S. Gordon and his group it was conclusively demonstrated that a number of other methods were more efficient. Of these the most effective was the hip lift back pressure method, and nearly as effective and less fatiguing, the arm lift back pressure method, with the Sylvester method third.

Following this, the American Red Cross, Bureau of Mines, Department of Defense and others revised their teaching and advocated the arm lift back pressure method as the method of choice for general teaching. Because it could be applied by persons of all ages, sexes and weights to a variety of victims it was felt that this method would be most universally applicable. Since the hip lift back pressure method was more efficient, it was advocated for rescue squads, police, fire and others where adequate strength and trained manpower were available. Furthermore, it has been shown that while the arm lift method is easy to demonstrate, it is hard to teach well and even harder for the beginner to perform well. On the other hand, the hip lift back pressure method is easy to teach and perform.

Physicians have continued to examine the subject and following another extensive group of studies, a special report to the Council on Medical Physics of the American Medical Association recommended the abandonment of all these methods wherever feasible and replacement by mouth-to-mouth resuscitation (expired air inflation).

Thus "the wheel has come full circle" for of all methods this is the oldest. It is sometimes known as the method of Kings, or the Biblical Method, and a description may be found in the Holy Bible where Elisha revived the son of the Shunammite by this method.

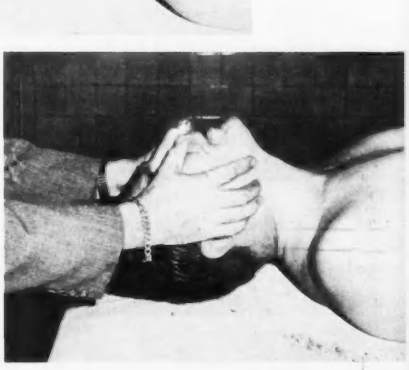
Resuscitation with expired air is simple and effective. It is particularly useful in cases of bodily injury and is adaptable to infants, children and adults. The chief advantage of mouth-to-mouth resuscitation is that it assures an adequate airway.

If partial or complete airway obstruction occurs it can be detected immediately by noting stoppage in the patient's breathing or failure of his chest to rise and fall with each inhalation. The cause can then be remedied, whether it be malposition of the jaw, a foreign body or mucus obstructing the airway. In the presence of partial obstructions it is often possible to ventilate the victim at least partially by increasing the pressure used and by slowing the rate of inflation in order to bypass the obstruction.

The technique is as follows:

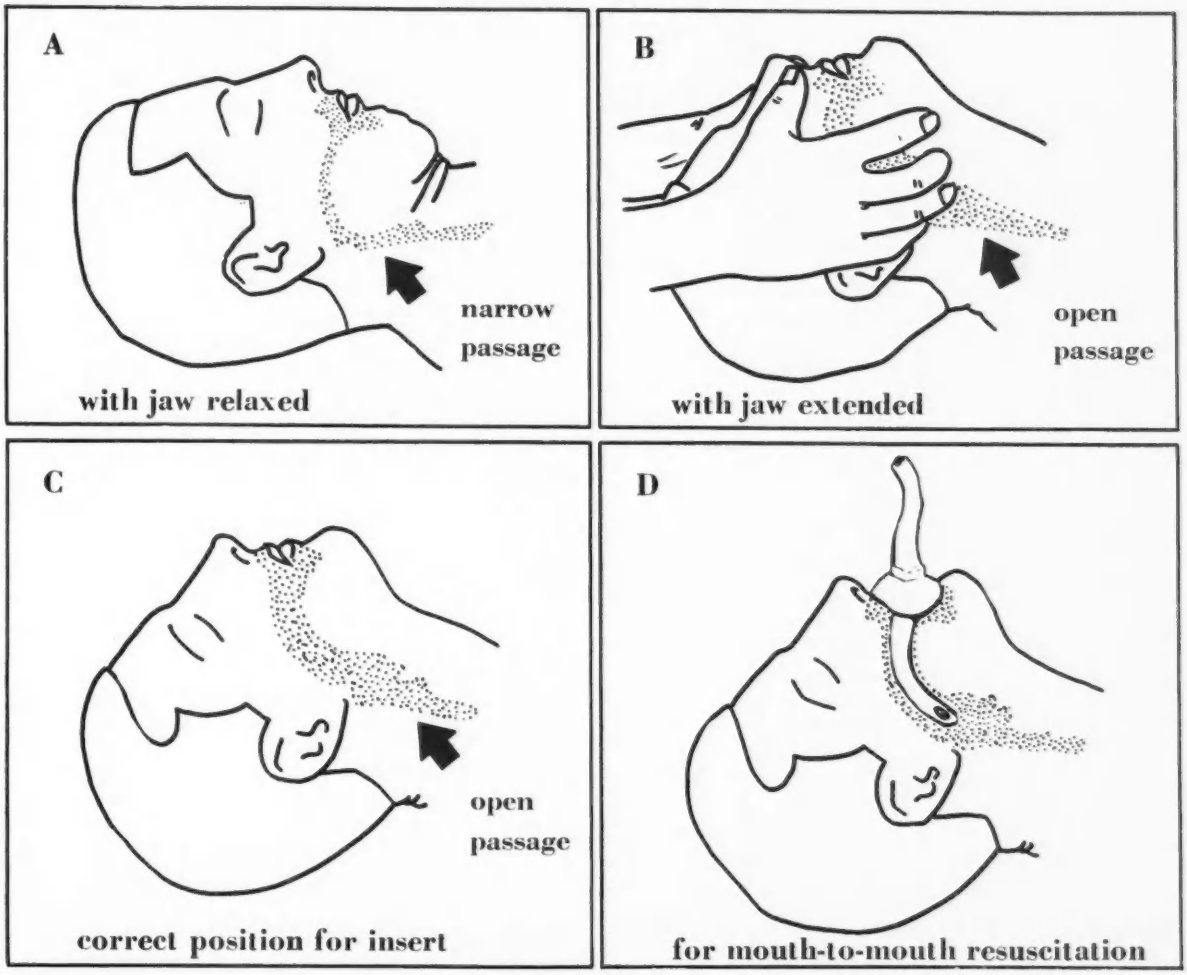
The subject is placed in the supine (lying on the back) position with the rescuer at the side of the head. Proper and adequate elevation of the lower jaw is the single most important factor for introducing a free and unobstructed airway. It draws forward the hyoid bone (small bone in the base of the neck) and the muscular attachments in the floor of the mouth and the base of the tongue to maintain an unobstructed oropharyngeal airway. This is best accomplished by having the rescuer grasp the lower jaw of the victim between the thumb and index finger and lift it forward while the other thumb and index finger are used to clamp off the nostrils.

Unconscious person on his back probably would look like this, with lower jaw helping to block off airway. *(All photos by Pvt. Goldman, Washington, D. C. Fire Department.)*



Rescuer should grasp victim's face like this, then lift jaw forward while clamping the nostrils. Safar tube can then be placed into mouth for starting resuscitation.

Oropharyngeal airway



Four steps in the preparation of an unconscious victim for mouth-to-mouth resuscitation. Shaded portion from mouth through neck is airway. Note how it varies with position of chin. *(Drawings by Corporal Cooperthwaite, Washington, D. C. Police Department.)*

The rescuer then presses his mouth over the victim's mouth making a relatively leakproof seal. He breathes into the mouth with short, smooth, even breaths. These are maintained only long enough to provide good inflation of the victim's lungs. The operator then removes his mouth from the victim's face and allows passive exhalation. The cycle should be repeated 12 to 20 times per minute. As an alternative, mouth-to-nose resuscitation may be used. The rescuer elevates the lower jaw of the victim by lifting with the fingers of both hands behind the angles of the mandible as described previously. He then places his mouth over the victim's nose and inflates the lungs. He can place his cheek over the victim's lips or cover them with a finger.

A comparison of the four leading methods showed that mouth-to-mouth methods ventilated in every case. The Sylvester method ventilated only 50 per cent, the back pressure arm lift 62½ per cent and the back pressure hip lift 75 per cent. The Schaefer and Rickard methods should be discarded.

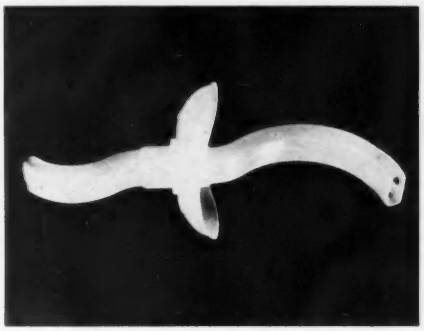
In the past there have been a number of objections to the mouth-to-mouth method because of the increased carbon dioxide and lowered oxygen content of expired air coming from the rescuer's lungs. However, Dr. Elam and his associates have conclusively demonstrated that these objections are not valid. Even if the oxygen of the rescuer's expired air is reduced to 17½ per cent, and the carbon dioxide is increased as much as 3½ per cent, the patient receiving proper mouth-to-mouth resuscitation will still show 96 per cent efficient ventilation. The rescuer can increase his oxygen content by taking one or two deep breaths which will increase his oxygen content still more and lower the CO_2 content to less than 2 per cent. Children can adequately resuscitate adults and the physical effort required for this method is less than any other method. Four or five breaths (5 to 20 seconds) will restore the pulmonary oxygen concentration of the victim to normal.

A second and perhaps more valid objection is the possibility of acquiring an infectious disease. While this possibility exists, Dr. Peter Safar is of the opinion that the rescuer's own individual resistance is an important factor in warding off disease. He cites two cases in which direct mouth-to-mouth resuscitation was per-

formed without an airway in which no disease developed. He believes that individual resistance is the most important factor in the prevention of transmitting disease by this method. The use of a dual oropharyngeal airway does much to avoid this problem. In addition, it should be borne in mind that while the rescuer blows into the mouth or airway during the inspiratory phase he removes his mouth during expiration which is entirely passive. It should be remembered, too, that most victims of accidents requiring resuscitation were previously healthy. Nevertheless, the possibility of infection does exist and efforts should be made to determine whether disease is present and if so, its nature, so that adequate prophylactic methods and the use of antibiotics can be undertaken on the rescuers by physicians. Third, the aesthetic problems involved under these conditions and fourth, particularly in southern states, a certain amount of prejudice must be overcome. These are potent problems.

Safar has devised a dual oropharyngeal airway which partially circumvents this problem. This is a useful adjunct and will be available in mid-October 1958. It is effective and cheap. Several hundred could be bought for the price of a single standard resuscitator. In addition to the Safar model at least two other mouth-to-mouth tubes are being offered for sale. One contains a valve designed to prevent infection from reaching the rescuer. Such a valve opens with passive expiration, however, the ends may be easily confused in an emergency situation. A second model has an inadequate face seal and is offered in four sizes (two separate airways). This may lead to confusion as to which airway to use and it is also possible that the proper size may be mislaid at a time when it is most needed.

The beauty of the Safar device is its extreme simplicity. The Safar Airway will also be of assistance in minimizing objections to direct facial contact with an unconscious victim. It should be carried in every emergency vehicle. These include fire trucks, chiefs' cars, rescue cars, police scout cars, patrol wagons, motorcycles and gas, electric and telephone company vehicles. However, in its absence one should never wait for such a device to be secured. Direct mouth-to-mouth resuscitation should be applied immediately or, if this is not acceptable to the rescuer, the back pressure arm lift or back pressure hip lift may be an acceptable alternative. The Schaefer prone pressure method is not effective and should not be used in any case. It has also been shown that the recently advocated method of Rickard (prone tilting visceral shift) advocated for the resuscitation of small children is an ineffective method. The insertion of the fingers in the mouth for the purpose of providing an airway usually results in obstruction rather than an airway. The pole-top method used extensively by power and telephone company employees for victims who have been electrocuted and remain hanging in their safety strap should likewise be replaced by mouth-to-mouth resuscitation preferably with the Safar type airway.



The oropharyngeal airway devised by Dr. Safar promises to be a cheap, effective instrument for mouth-to-mouth resuscitation and should help to minimize the objections to this method of artificial respiration.

Mechanical oxygen resuscitators are still useful but they are seldom immediately available and the other methods described above should be immediately instituted. When mechanical resuscitators are used an airway should be inserted and the "sniffing position" should be instituted by elevating the jaw and retracting the head.

A Paper on Fire Storms

A PAPER bringing together most of what is known about fire storms has been written by Pierre Besson, *Chef de Bataillon* of the *Régiment de Sapeurs-Pompiers* of Paris, France. It has a foreword by the author's namesake, Colonel Besson, *Commandant* of the *Régiment*. Members interested in this topic will find this publication in French a useful reference. It is entitled "*La Tempète de Feu*" and is printed on fine paper with numerous illustrations, 10¼- by 7-in., 56 pages. Orders for the book should be sent to Editions France Selection, 11 Rue de Département, Paris 19, France (Price: 170 francs).

Contest Judges

A DISTINGUISHED group of men has accepted invitations to serve as judges for NFPA's 1958 Fire Prevention Contest in December.

The board to select winning United States entries includes to date J. C. Hullett, President of the Hartford Fire Insurance Company; R. C. Malmquist, President of the International Association of Fire Chiefs; and J. Sharp Queener, Manager of the Safety and Fire Protection Division, E. I. du Pont de Nemours and Company.

The Canadian panel includes Alexander Addie, Insurance Superintendent of the Canadian Underwriters' Association and C. A. Thomson, Dominion Fire Commissioner.

86th IAFC CONFERENCE

THE International Association of Fire Chiefs has announced that its 86th Annual Conference will be held in Grand Rapids, Michigan, August 31 to September 3, 1959. Host will be Chief Adrian J. Meyers of the Grand Rapids Fire Department.

Sergeant (white hat) wields axe to smash window. Fire apparently started in light fixture, then ignited combustible fibreboard ceiling. Fire burned in attic about four hours before discovery by two employees several hundred feet away.

Sergeant backs down ladder as smoke and hot gases boil out. Hose bursts in left foreground. Strong wind was blowing into louvre at north end of building.

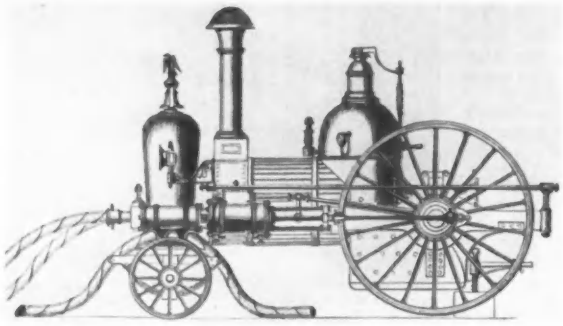
PHOTOS OF THE MONTH

THE unusual sequence of pictures on this page was taken during a recent fire in Washington, D. C. They illustrate clearly the hazards of ventilating a building particularly when fire has caused a buildup of heat and fumes in an upper floor. In the first picture, a sergeant (company officer in the D. C. Fire Department) prepares to smash a window to ventilate the heat-filled room. The other pictures arranged in order clockwise show what happened as the smoke and fumes boiled through the window and ignited when sufficient oxygen was reached. Note the peculiar downthrust of flame in the picture at lower right, possibly caused by wind or when a hose stream was brought into play in the lower portion of the building. (*Photos by Eugene A. Jackson, Washington, D. C.*)

Hot gases ignite on reaching oxygen. A fire door in a masonry wall apparently did not operate and entire attic became involved.

Heavy flame rolls over ladder as men move into building.

Control now being established as fire fighter sweeps room with straight stream. Overall loss was estimated at $105,000.



P. R. Hodge built this steam fire engine in 1840 to launch the era of the "self-propellers." Note jack device between rear wheels at right. During fire fighting, this was used to raise the rear end clear of the ground. Generally, though, this engine was unsatisfactory and it was another twelve years before the "Joe Ross," the first successful steam fire engine saw action.

"THE SELF-PROPELLERS"

by NFPA Member Harold S. Walker, Fire Protection Engineer, Sixth Naval District

THE first steam fire engine in the United States was designed and constructed at the instigation of insurance companies, in 1840 by P. R. Hodge, C. E., an ingenious mechanical engineer of New York City. This was an odd-appearing self-propelled affair about 14 feet long, shaped like a locomotive, with huge driving wheels at the rear. It weighed between seven and eight tons. The engines were horizontal and had cylinders attached to the smokebox at the front end of the boiler. The pistons of the steam cylinders and water pumps were on the same rods and the connecting rods were attached to cranks on the wrought iron rear wheels. When the engine arrived at the scene of the fire, the rear end was raised clear of the ground by means of a jack-screw and the wheels used for balance.

Although this engine apparently passed tests, it was not a complete success. It was cumbersome, slow to get into action and frequently (so the chief reported to the Common Council in 1841) some part of the machinery broke down after being set in motion. Moreover, its presence was bitterly resented by the volunteer firemen who pinned their faith to manpower at the brakes of hand engines. So it was put aside and not until 12 years later were property owners and insurance underwriters convinced that a more efficient means of extinguishing fires than manual engines was needed.

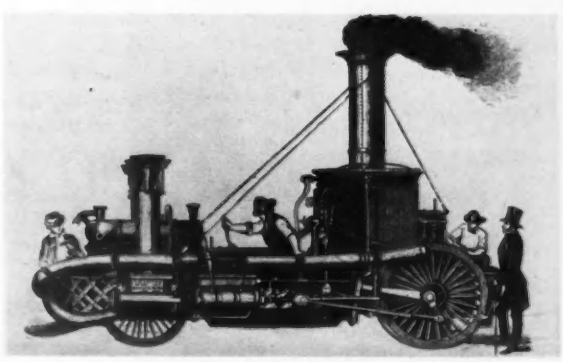
The next attempt at building a steam fire engine was in 1852 when Moses Latta of Cincinnati designed and built the first *successful* steam fire engine, the "Joe Ross." This also was a ponderous self-propeller with two large rear wheels for propulsion and a smaller one in front which served as a steering wheel.

Like the Hodge engine, the "Joe Ross" was odd looking. The boiler was square and upright and known as a "gunpowder" because steam was generated by flashing cold water into a hot boiler. It had two horizontal cylinders; one on each side. The pumps, as on the Hodge engine, were in front of the cylinders and driven direct. The engines (cylinders) were coupled with the driving wheels at the rear by connecting rods. Altogether, the "Joe Ross" weighed more than ten tons and required pulling by four horses, ridden artillery fashion, and propelling power by the engine.

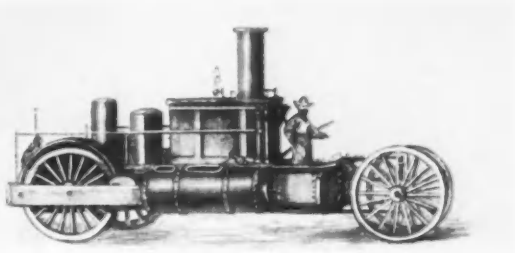
At the acceptance test, the engine was ready to work in seven minutes from the time the fire was lighted under the boiler until water was thrown through a 3-in. hose with a 1½-in. nozzle to a distance of 225 feet. Later, six good streams were obtained at one time using smaller calibre nozzles.

This self-propeller was accepted on January 1, 1853 and remained in service until December 6, 1855 when, while being tested, its boiler exploded killing the engineer and injuring several others. The explosion was due to the firebox not being properly stayed. A steam pressure of 180 psi was being carried at the time.

In 1854 another self-propeller, similar in construction but weighing only about half as much as the "Ross" was built from voluntary contributions of the Cincinnati citizens. It was appropriately named "Citizens Gift," had double 11-in. cylinders and 6⅝-in. pumps and threw a stream through 2½-in. hose with a large nozzle a horizontal distance of 297 feet.



Similar to the renowned "Joe Ross" of Cincinnati, this "Citizens' Gift" was built by the Latta firm in 1854 through contributions of the people of that city. Note square boiler and suction hose.



In 1859 the firm of Lee and Larned in New York City built three self-propelled engines. This one went to the Exempt Engine Company in the City.

Its record for raising steam to a working pressure was 3 minutes 10 seconds.

The firm of A. B. and E. Latta did quite an extensive business but how many of their engines were self-propellers is not known. In 1863 the business was sold to Lane & Bodley who built seven or eight machines among them at least one self-propeller of an improved Latta pattern for Engine No. 10 of St. Louis, Missouri.

Another early builder was the New York City firm of Lee and Larned which built three self-propelled engines in 1859. One went to Exempt Engine Co. of New York City, one to Southwark Engine Co. of Philadelphia and the third to Pittsburgh, Pennsylvania. The Philadelphia engine was driven over the road under its own power from New York — a considerable feat for those days.

These were known as mongrel engines because they had rotary pumps and piston cylinders. They resembled street locomotives and were capable of propelling themselves on any ordinary street or road. The power to drive the machines on the highway was transmitted from the engine (steam cylinders) to the rear wheels by parallel rods which, on reaching the fire, could be disconnected instantly and the power transmitted directly to the pump, also at the rear.

The boilers were upright, located about midway between the front and the rear. The frame, made of boiler and angle iron, was suspended on four lengthwise springs and one crosswise spring under the rear axle. The pump could discharge six gallons per revolution and at ordinary working speed would discharge from 600 to 700 gpm.

The engines were guided by the running gear of F. R. Fisher whose steam carriages were attracting a great deal of attention at the time. The two front springs, placed one above the other in the line of the center of the carriage, took hold of a vertical spindle connected with the forward axle by a kind of universal joint. At the top of this joint was a horizontal crank, which, when turned by a worm and screw, controlled the direction of the axle, thus permitting the engine to be steered easily and precisely.

These engines did not meet with the general approval because they were heavy and cumbersome. After the first three were built, the company built lighter engines to be drawn by men or horses.

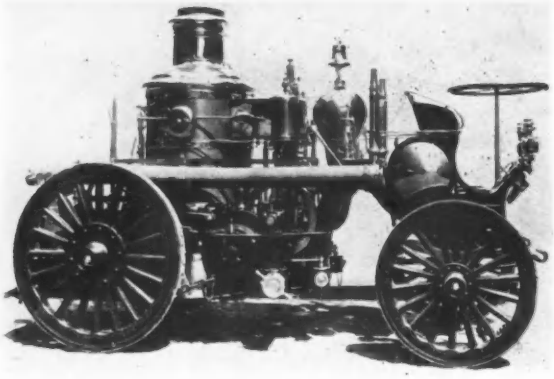
The only company which built successful self-propelled steam fire engines was the Amoskeag Manufacturing Company of Manchester, New Hampshire, and its successors the Manchester Locomotive Works and the International Power Company. The first Amoskeag self-propelled engine was constructed in 1867; the last in 1908. In the years between, the firm built 22 self-propelled engines. All gave satisfactory service.

The original idea for a self-propeller started from a little steam-propelled wagon built by two foremen at the Amoskeag plant, James Bacheller and W. H. Rittener of Manchester in 1862. This wagon attracted the attention of Freeman Higgins, superintendent of the machine shop and Daniel Morse, superintendent of the brass foundry and as a result of a discussion among the four of them, two experimental steamers were built. On its first trial, one of these steamers ran from the Amoskeag plant up the Stark Street hill to the fair grounds at a speed of about eight miles per hour.

One of these Amoskeags had its rear wheels solid on the axle; that is, it had a round axle which turned in two boxes on each side of the frame. It was of the straight frame type (the front wheels did not cut under) and had a chain drive extending from the pump shaft to each rear wheel; an arrangement which enabled the engine to propel itself fairly well although some difficulty was experienced in turning corners. The other engine was of similar construction but only on one rear wheel, solid on one axle, free on the other. It, too, was difficult to handle in turning corners.

One, or maybe both, of these engines was demonstrated in Boston and other cities but there was no particular demand for self-propelled engines and they remained in the Amoskeag shops for some time. In 1872, the horses in the eastern part of the country were attacked by an epizootic disease and wagons frequently had to be hauled to fires by men and boys. As a result

Maneuverability of Amoskeag steamers was increased with the introduction of compound gears in the rear axle. First one to feature this is shown here and went to Lafayette Engine Company No. 1, Detroit, Michigan.



Years of service was given to Boston, Massachusetts by this Amoskeag, Engine 38 shown here in 1897 and finally retired in the 1920's.

of this situation, New York City purchased an Amoskeag in October, 1872, where it was assigned to Engine Co. 20. The other was sent to Boston (by train) to help fight the conflagration of November 9, 1872 where it rendered effective service. Following the fire it was purchased by the city and placed in service with Engine Co. 21 in the Dorchester district. It was rebuilt as horse-drawn apparatus in 1874 and remained in active service until 1894.

While on a business trip to New York in 1873, Superintendent N. S. Bean of the Amoskeag Company met a gentleman who suggested that self-propelling engines would be greatly improved by incorporating in their driving mechanics a "compound" gear such as was in general use on cotton speeders in cotton mills. The gentleman claimed that by use of this gear, power could be applied to both driving wheels in such a way that when turning corners, the wheels would be driven automatically without appreciable loss of power.

Bean, having other matters on his mind, did not give any particular thought to the suggestion and did not even learn the gentleman's name, but after his return to Manchester he came to the conclusion that the idea was worth looking into. As a result, one of the gears was manufactured for a steam fire engine.

At the time, a self-propelled engine was under construction for Lafayette Engine Co. 1 of Detroit, Michigan, which, except for a crane neck frame in place of the straight frame, was of the same general design as the engines then in service in Boston and New York. It was decided to make the experimental installation on this engine. In due time, the engine was completed and tested. Its trials proved that the suggestion of the gentleman in New York was sound in every particular and that the self-propeller feature had been greatly improved. All engines subsequently made were equipped with this device which was patented by Mr. Bean in 1875.*

The Amoskeag catalog for 1874 commented on the driving mechanism of these engines as follows:

"The propelling and steering apparatus are very simple in this construction, and are so arranged as not to interfere in the least with the use of ordinary drawing for either horses or men, if it is desirable to use them. The propelling is done by the same wagons that are used for the pumps and these are made reversible, so that the machine can be propelled backwards and forwards, as desired.

"The engine is propelled by a connection between the crankshaft and the rear wheels of the engine, made through an endless chain working over sprocket wheels, with a set of compound gears upon the rear axle so arranged that in turning the engine the two rear wheels are driven at varying speeds.

"The steering apparatus is arranged so that while the driver is enabled to change the inclination of the wheels at will, the jar occasioned by locomotion is inoperative to change the position of the steering wheels; hence, the constant exertion of the drivers is not required to keep the machine in line even when moving at the rate of 16 miles the hour."

Between 1873 and 1889, thirteen Amoskeag self-propelled engines were built, all approximately like the Detroit engine. In 1889, a double extra first size self-propeller was built for Hartford, Connecticut which formed the model for all later engines of this type.

The 1889 Hartford and subsequent engines were constructed with rod and cross-head connections between the steam cylinders and pumps which made it possible to change or reverse the motion of the engine. The road driving power was applied from one end of the main crankshaft, through a "compounder" or equalizer, to two endless chains running over sprocket wheels on each of the rear wheels of the apparatus. This per-

Boston's Engine 38 in a pumping exercise. Note shovel and poker leaning on rear wheels.

*It is interesting to note that the differential gear with which all modern automobiles are equipped is essentially the same device, although differing in design and detail, as that applied to the self-propelled steamer fire engine Lafayette No. 1 of Detroit, Michigan, in 1873.

Engine No. 4 of Hartford, built in 1901, is still in fine condition at Wilson, Connecticut.

mitted the rear wheels to be driven at varying speeds, when turning corners without loss of power. When it was desired to work the pumps, the engine was disconnected from the road driving gear by the simple expedient of removing a key.

Control equipment was located at the engineer's post at the rear of the boiler and was similar to that of a locomotive with throttle, reversing gear, and other controls close at hand. Steering was effected by a large hand wheel at the front of the machine and by action of a pair of bevel gears and a worm gear connected to the front axle. It required very little effort on the part of the steersman to keep the engine in line or to change the inclination of the wheels even when traveling at full speed. On a fair road the vehicle could make over ten miles per hour. Spike-tires were provided for winter service.

The Hartford engine, built in 1889, was the city's third self-propeller and was considered the largest and most powerful engine in the world.

It was assigned to Engine Co. 3 located in the heart of the downtown section and was known far and near as "Jumbo." Its height to the top of the smokestack was 9 ft. 9 in.; length overall was 15 ft. The boiler was 40 in. in diameter and contained 301 copper tubes.

Another Amoskeag, Engine 5 of Portland, Maine, was one of the later models (1903) and featured better control equipment.

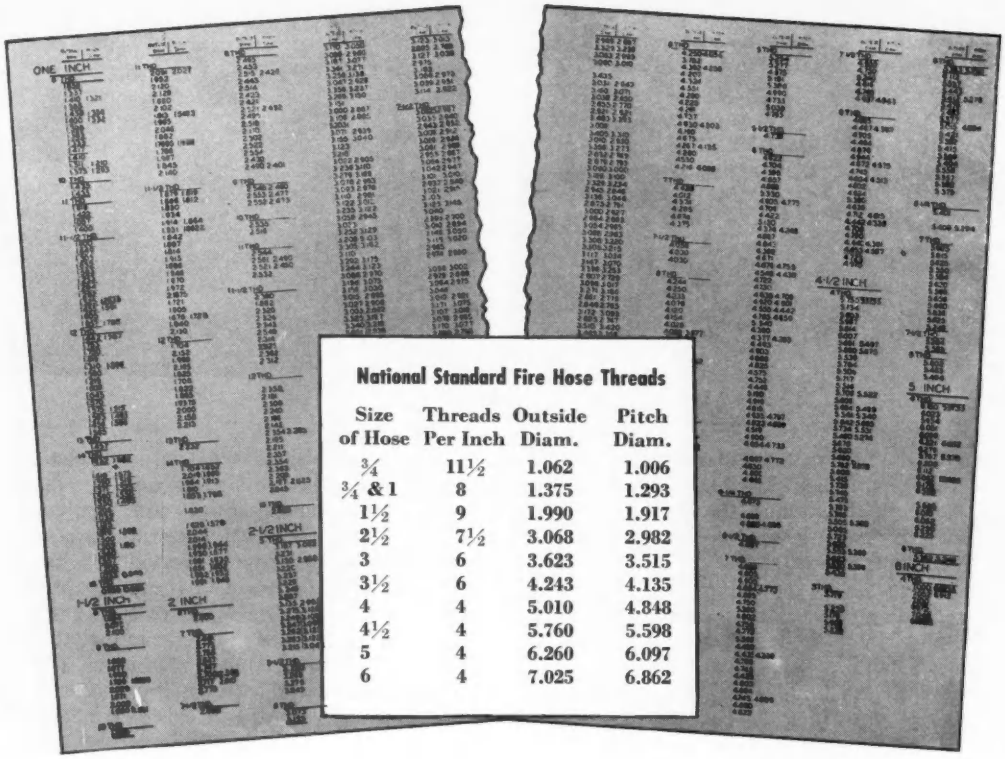
The pumps were double; 5½-in. in diameter with 8-in. stroke. The steam cylinders were 9½-in. with 8-in. stroke. Its pumping capacity was 1300 gpm.

This engine was in active service as a self-propeller until 1915 when it was converted to a tractor-drawn machine by the removal of its self-propelling mechanism and the addition of an A & B gasoline-electric tractor. It was placed in reserve in the late '20's and is now in the James Melton Autorama at Hypoluxo, Florida. Another Hartford self-propeller, Engine No. 4 built in 1901, is still in existence at Wilson, Connecticut, in its original condition.

Most of the Amoskeag self-propellers lived long and useful lives and some of them remained in active service after motor apparatus came into general use. New York City purchased its first one in 1872 and four more in 1874. They remained in service with Engine Cos. 8, 11, 24, 31 and 32 until 1884 when two of them were converted to horse-drawn and the others placed in reserve. Two others built in 1874 for Brooklyn, New York and Fond du Lac, Wisconsin, were converted to horse-drawn engines in 1896 and 1897 respectively.

The two last Hartford self-propellers, built in 1889 and 1901 respectively were not retired until the late '20's; the two Boston engines (Engine 35 and 38) were removed from active service in the '20's but Engine 38 was still in the fire station on Congress Street in the late '30's and the writer saw the Portland, Maine, engine, built in 1903, in the Central Fire Station in the early '40's.

Much of the service performed by the later self-propellers was at large fires where their pumping capacity of 1300 gpm was needed. Their use on ordinary alarms had one serious drawback; sparks from their smokestacks as they roared down the street frequently ignited awnings and other combustible trim on stores and other buildings along the way. It was stated by Boston fire officials that on a summer day it was necessary to send a chemical company along behind Engine 35 from the Mason Street fire station as it traveled along Tremont Street en route to a fire. Hartford, where two of these engines responded to most alarms in the business district, reported a similar experience. In Portland, Maine, the company to which the self-propeller was assigned also had a horse-drawn steamer. The former was used at big fires only; the latter for all first alarm response.



National Standard Fire Hose Threads

Size of Hose	Threads Per Inch	Outside Diam.	Pitch Diam.
¾	11½	1.062	1.006
¾ & 1	8	1.375	1.293
1½	9	1.990	1.917
2½	7½	3.068	2.982
3	6	3.623	3.515
3½	6	4.243	4.135
4	4	5.010	4.848
4½	4	5.760	5.598
5	4	6.260	6.097
6	4	7.025	6.862

MORE FACTS ON THE

NATIONAL STANDARD THREAD

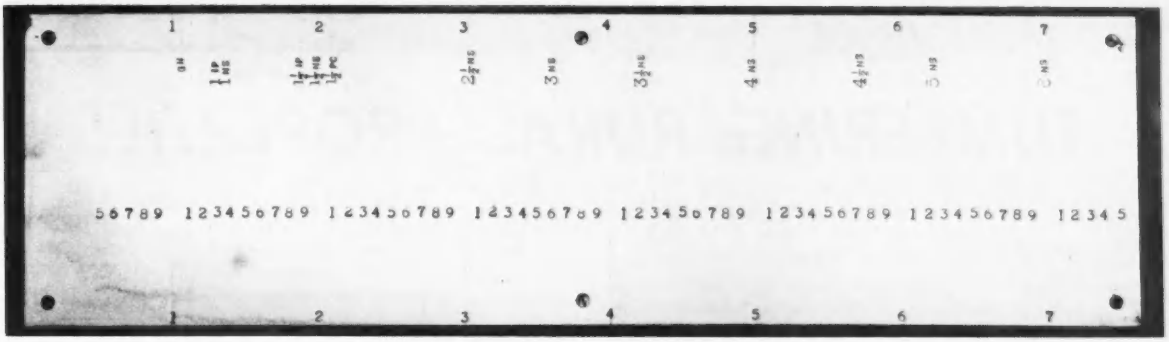
AS POINTED out last month the use of non-standard fire hose coupling screw thread can lead to delay and confusion at large-scale fires and to additional expense for adapter couplings or special threads which may not be carefully engineered as standard thread. This is regrettable for, as shown by the standardization program now in process in California, fire departments can convert to National Standard threads simply and economically. Battalion Chief Robert Ely, Master Mechanic of the San Diego, California, Fire Department, who heads the IAFC Hose Coupling Standardization Committee now is making a survey of fire departments throughout the country to get an up-to-date report on the progress of hose thread standardization and to focus attention of fire chiefs on the feasibility of a thread conversion program.

One aspect of the standardization problem is shown by the illustrations above. The large chart in the background represents the inventory of fire hose couplings that must be maintained by one major manufacturer of fire apparatus. Altogether this chart lists 771 different couplings ranging from the 1-in. to the 6-in. size and from 18 threads per inch on 1-in. couplings down to four threads per inch on the 6-in. couplings. Compare this chart with the recommended National Standard fire hose thread size and dimensions in the smaller chart. Consider the savings in time, effort and cost that could be effected if this manufacturer's inventory could be reduced to the National Standard fire hose threads. The manufacturer, of course, could only make this reduction if the municipalities and fire departments that purchase his apparatus and equipment are willing to confine their specifications to the National Standard recommendation.

The characteristics of National Standard fire hose coupling screw threads are detailed in NFPA Standard No. 194. (*Price: 35 cents per copy.*) Actually, the recommendations of this standard have been developing for more than 50 years for it was in 1905 that the NFPA appointed a Committee on Hose Couplings and Hydrant Fittings. It was through the efforts of this original committee that the National Standard thread for 2½-in. hose couplings was finally established and was adopted by leading organizations concerned with fire departments, fire protection and water supply.

According to this standard, the features which make a coupling suitable for fire department and general fire protection use are:

1. Uniform thread dimensions permitting complete interchangeability.
2. A strong and rugged design which will stand up in fire fighting service.
3. The use of couplings of the expansion ring type, with a relatively long expansion ring and tailpiece.



Battalion Chief Ely uses this stainless steel plate gauge to check the diameter of male threads of fire hose couplings. As shown here, the lines running vertically across the plate marked on the bottom 1 through 7 represent the diameter in inches. Numbers running across the center of the plate in groups of 1 through 9 are spaced to read .100 inch diameter. Other lines in between these numbers measure .050 and .025 inches. Lines are also laid out for National Standard fire hose threads including the allowable tolerances. Also marked on the plate are measurements for garden hose thread, 1- and 1½-in. Iron Pipe thread and 1½-in. Pacific Coast thread diameters. The gauge was designed by Chief Ely and marked out by Capt. George Hume and fire fighters R. Covich and Jack Garrison of Station 6, San Diego Fire Department.

4. A waterway the full nominal inside diameter.
5. The tailpiece rounded at its inner edge to prevent cutting of the hose fabric at the place where it leaves the coupling. For a similar reason, the expansion ring must be such that the tailpiece of the coupling overhangs it approximately ⅛-in.
6. Gaskets which do not protrude into the waterway.

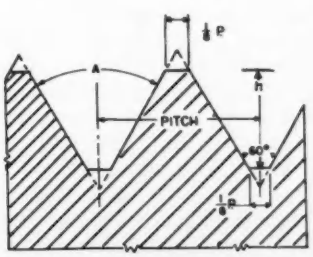
The recommended basic thread form is American National Standard having an included angle of 60° and truncated top and bottom. With the exception of garden and booster hose coupling threads, the outer ends of all fire hose, external and internal threads, should be terminated by the "Higbee Cut" or "blunt start" to prevent crossing and mutilation of the coupling threads.

Basic Form of National Standard Thread

1. Angle of Thread — The basic angle of thread (A) between the sides of the thread measured in an axial plane is 60°. The line bisecting this 60° angle is perpendicular to the axis of the screw thread.
2. Flat at Crest and Root — The flat at the root and crest of the basic thread form is ⅛ x p, or 0.125 x p.
2. Depth of Thread — The depth of the basic thread form is:

$$h = 0.649519 \times p, \text{ or}$$

$$h = \frac{0.649519}{n}$$



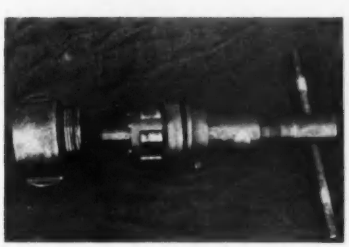
Where:

p = pitch in inches, or

$$p = \frac{1}{n}$$

n = number of threads per inch

h = basic depth of thread



The 2½-in. fire hose coupling at left had 7 threads per inch and the outside diameter was ½-in. smaller than National Standard dimension. The roller type expander at right was used to expand the thread; then a National Standard die was run over the threads to change them to the 7½-in. National Standard thread dimension. The female coupling was then tapped to the proper thread dimensions and size.

(Right) This machine, designed by Chief Ely, will correct and re-thread a coupling to the National Standard dimensions in one and one-half minutes. At left is Fire Fighter Jack Garrison. In the center is Chief George E. Courser and at right is Battalion Chief Ely, all of San Diego.

(Left) Captain George Hume and Captain W. E. Eiter are shown cutting threads on the female coupling of a suction hose.

Jack Garrison uses a tolerance gauge on a suction hose thread in the middle of a display of San Diego nozzles and couplings. White pamphlet in center is NFPA Standard No. 194 used as the criteria for the dimensions for all fire hose coupling screw threads in the department's equipment.

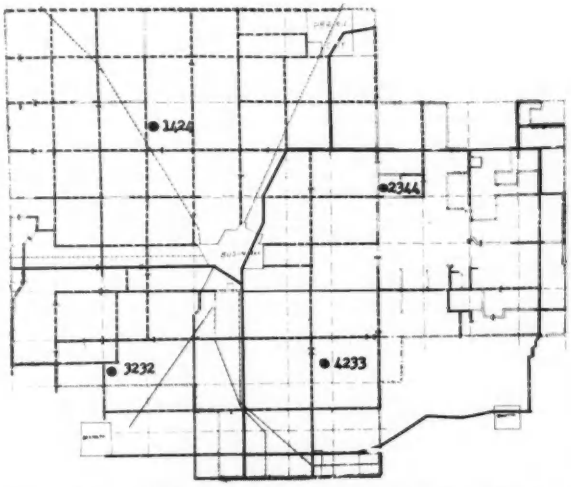
TWO METHODS OF

NUMBERING RURAL PROPERTIES

FREQUENTLY we receive inquiries from fire departments in rural areas asking how to number rural properties to provide prompt fire alarm response. In a typical rural area, the fire department's first indication of a fire probably comes through a telephone call from an excited farmer who may be miles away from fire headquarters. All too often, precious time is wasted in identifying the property, checking the best route of response for apparatus, and in briefing fire fighters on the location of water supply and other particulars.

Two interesting reports on operations in rural areas have been submitted by Dr. J. B. Meloan, president, Board of Trustees, Bushnell, Illinois, Fire Protection District and by Chief F. C. Richter of the Batavia, Illinois, Fire Department. Both of these fire service organizations have made thorough inspection and study of their respective areas and have developed workable plans for prompt identification of properties involved by fire.

The Bushnell Fire Protection District, formed in 1952, now protects an area of 85 square miles including the city of Bushnell and three villages. Bushnell and the village of Prairie City both have municipal water supply systems but the rest of the district offers typical rural water supply problems. The present fire department was developed around the old Bushnell city department and now has a headquarters station in Bushnell and another station in Prairie City. There are seven pieces of apparatus but the equipment used for the rural areas includes two Class A 500 gpm pumpers with 750 gallon tanks and a 1,000 gallon tank truck. The two pumpers also have dual booster reels, two preconnected 1½-in. lines and a 35-ft. ladder, while the tank truck has a 300 gpm pump, two booster reels, ladders and a 1,000 gallon folding canvas tank. This tank and portable pumps are used extensively on rural calls. All trucks are equipped with two-way radio.



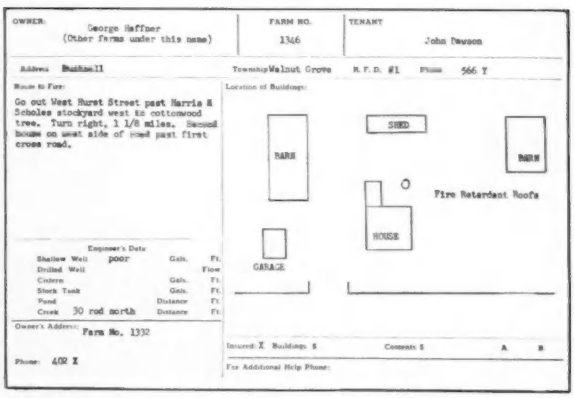
Sketch of the Bushnell Fire Protection District showing properties numbered according to the identification plan. For example, property number 2344 is in the northeast quadrant, three miles north of the horizontal dividing line, four miles east of the vertical dividing line, and the fourth farm in a clockwise direction from the northernmost point of the square mile.

Members of the department are paid-on-call, receiving $5.00 for each rural alarm, $4.00 for each city call and smaller sums for training and details. The chief, assistant chiefs and clerk each receive a token yearly salary of $100.

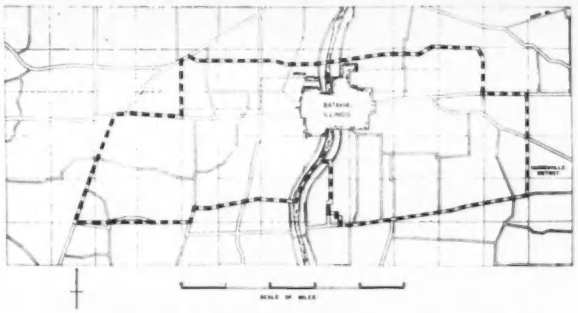
Bushnell has used a numbering system for more than five years. It is simple but quite effective. The district is divided into four quadrants; the northwest quarter has properties numbered in the 1,000 series; the 2,000 series is used for the northeast; the 3,000 series for the southwest; and the 4,000 series for the southeast. The first digit indicates the quarter of the district where the involved property is located. The second number indicates the number of miles north or south of the dividing line in which it is located, the third number shows the miles east or west of the dividing line and the last number is the individual farm in each square mile in a clockwise direction.

Members of the department have inspected all rural properties and have distributed number plates with the appropriate digits. A factory which produced the license plates for Illinois vehicles cooperated in turning out sufficient plates for the Bushnell district and so, according to Dr. Meloan, the cost was low and the plates have been durable.

In addition, fire fighters who inspected the rural properties listed the special hazards, exposures, location of water supply and other details on cards that are kept on file in each station. Each year these cards


OWNER: George Haffner (Other Farms under this name)
FARM NO. 1346
TENANT John Dawson
Address Bushnell
Township Walnut Grove R.F.D. #1 Phone 566 Y
Route to Fire:
Go out West Buret Street past Harris & Scholes stockyard west to cottonwood tree. Turn right, 1 1/8 miles. Second house on west side of road past first cross road.
Location of Buildings:
SHED
BARN
BARN
Fire Retardant Roofs
HOUSE
GARAGE
Engineer's Data:
Shallow Well poor Gals. Ft.
Drilled Well Flow
Cistern Gals. Ft.
Stock Tank Gals. Ft.
Pond Distance Ft.
Creek 30 rod north Distance Ft.
Owner's Address: Farm No. 1332
Phone: 402 X
Insured: X Buildings: $ Contents: $ A B
For Additional Help Phone:

Each rural property in Bushnell has been inspected by fire fighters and cards similar to the above are made out for use at the fire station. A different colored card is used to identify properties in each quadrant. Note detailed instructions for route of response.



Batavia's new fire protection district (within dashed border) also has been numbered in a four-digit series. The northeast corner of Batavia is used as the starting point and all roads are identified by numbers. The first digit indicates a main road, the second digit represents a secondary road and the third and fourth digits refer to the property location.

are studied to make changes concerning the vacancy of property, change of ownership, etc. In the station the cards are filed alphabetically by the owners' names in case an alarm should come in giving the individual's name rather than the number. However, Dr. Meloan reports that almost all the residents refer to the numbers both for fire alarms and as rural addresses. In addition, telephone stickers and instruction cards have been distributed to each property.

From Batavia, Chief Richter reports that a new fire protection district will be formed on January 1, 1959. The Batavia Fire Department then will give fire protection to outlying areas through a contract between the city of Batavia and the district. To identify rural properties for fire alarm response, the fire department has stencilled 15- by 6-in. metal plates bearing four-digit numbers. All roads in the district have been given a number. (See sketch.) The first digit indicates the main road out of the city. The second digit represents a secondary road off the main road and the third and fourth digits are the property location numbers. Thus, when a fire alarm is telephoned to the department headquarters, members know immediately where the property is and the best route of response.

To assist fire departments in rural areas, the NFPA Committee on Rural Fire Protection, headed by Chairman Robert C. Byrus, recently completed an 18-page, 6- by 9-inch illustrated booklet (NFPA No. 616M-P) suggesting a program of pre-fire planning and fire prevention for rural fire departments. The text sets forth practices proven effective by rural fire departments conducting year-round rural fire prevention programs and pre-fire inspections. It was adopted as a proposed NFPA manual by the Committee on Rural Fire Protection and is being circulated for use and comment with the understanding that it will later be incorporated in a book on rural fire protection now being prepared by the Committee. Copies are available at 50 cents each.

The first section of the new booklet covers pre-fire planning with suggestions on inspection, the preparation of cards showing routes of response, discussion of common fire hazards in rural property, and fire safety essentials. Section Two explains how to prepare a year-round fire prevention program and gives special attention to the preparation of stories for newspapers, radio and TV stations.

(Left) Properties in the Bushnell Fire Protection District are identified by metal plates with red numbers and letters on a white background similar to Illinois vehicle license plates of several years ago. These plates are posted prominently in front of the rural properties and have withstood severe weather and other types of damage.

(Right) In Batavia, fire department members have posted these 15- by 6-in. metal plates which have white numerals on a solid red background. The number is stencilled by fire fighters.

American Museum of Fire Fighting

THE American Museum of Fire Fighting was formally opened and dedicated at the Firemen's Home of the Firemen's Association of the State of New York at Hudson, N. Y., in October.

Ferdinand Zimmer, president of the Board of Trustees of the Home, together with Daniel F. Mullin, Chairman of the Building Committee, George H. Ebeling, Chairman of the Museum Committee and Kenneth H. Dunshee, Curator of the Museum, took part in the symbolic ceremonies of turning over the new handsome building and the priceless collection of fire fighting memorabilia to Dr. John G. Marvin, president, and other officers of the State Firemen's Association.

The present new building is an enlargement of an earlier building, and the collection reflects the support and enthusiasm of the Firemen's Home and the Association to make these available to the general public as an important historical and educational institution. The oldest fire equipment in the United States and representative items from other cities and communities throughout the State of New York and elsewhere present a very impressive array. Exhibited in the Engine Hall are actual pieces of apparatus showing the development of fire-fighting equipment from America's first fire engine which was imported to New York City in 1731, through the horse era, to automotive fire engines approaching the present day in date.

The Museum includes probably the most extensive and valuable collection of genre and portrait oil paintings, painted panels and other objects of art pertaining to fire history in the United States.

There is a special exhibit, probably the only one of its kind, devoted to firemen-soldiers who participated as regiments, groups and individuals in the Civil War.

The Museum is under the direct administration of the Board of Trustees of the Firemen's Home which since 1895 has been maintained by the Firemen's Association of the State of New York as a home for retired gentlemen who have given a full term of service to volunteer fire fighting. Over the years many thousands of deserving men who spent their lives in such important public service have been able to enjoy a secure, pleasant, comfortable home in retirement, and medical care in the hospital maintained by the Home. The Home is under the direct supervision of Superintendent William Kirk, Jr. and Assistant Superintendent Charles Seehuysen.

NEW TEST FACILITIES FOR U. L. INC.

A NEW addition has been made to the facilities of Underwriters' Laboratories, Inc., at the Northbrook Testing Station. It is designed at present for fire testing of floors, ceilings and roof covering materials but it will also be possible in the future to test all materials within the scope of the Laboratories' fire protection work.

The new building is 220 ft. long, 120 ft. wide, 45 ft. high and has 43,800 sq. ft. of working space. Concrete slab walls comprise the lower section while the upper section consists of insulated steel panels supported by steel framework. The new laboratory is completely protected by automatic sprinklers. It also features a 50-ton crane which can move the full length of the laboratory test area and out through the upper half of the north wall where the tested assemblies can be dismantled outside.

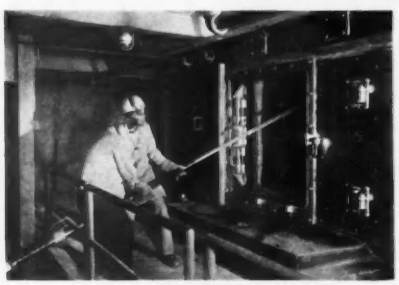
At present, test facilities include a floor furnace and curing cells. Special frames in which the test assemblies are installed were designed to facilitate the construction and handling of the test specimens. The crane moves the assemblies into the curing cell where the actual curing of the concrete can be greatly accelerated. Two floors can be cured in each of the cells. In addition, four more floors can be air-cured in the building without interfering with operation of the furnace.

The crane moves test assemblies from the air-curing pedestals to the curing cell and from the cell to the test furnace. Upon completion of a test, the crane then moves the floor test specimen to the exterior of the building where it is broken up and the crane is made ready for another specimen.

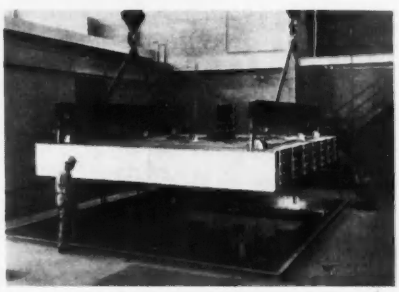
Test facilities for fire and wind tests of roofing materials are also in operation in the new building. A 500-sq. ft. record room is designed to serve as a shelter against possible fallout radiation of nuclear bombs.

Possible future operations include the fire testing of walls, beams, partitions, doors, windows, loaded columns, safes and record protection devices. (Photos by Underwriters' Laboratories, Inc.)

From this panel board the flow of gas and air to the furnace can be controlled. Furnace temperatures are automatically recorded on the meter in the background.



After completion of the fire test, the exposed surface (ceiling) is sprayed with water from a 1-in. tip at 45 psi for six minutes.



A cured floor test specimen being lowered into the furnace. Pylons at each corner of the furnace support thermocouples for recording temperatures.

The strong, lightweight Alco-Lite Ladders on this truck are designed specifically for short wheelbase Pumpers

The Pumper pictured above is a product of the American Fire Apparatus Co., Battle Creek, Michigan.

They're perfect as new equipment or as replacement for outmoded wood ladders

This picture shows the PEL and PRL Ladders nesting perfectly in a bracket used for wood ladders. The nested thickness of the PEL and PRL Ladders is 6⅞".

Alco-Lite Pumper Extension and Pumper Roof Ladders are made of high tensile strength aluminum alloy. They are easy to handle and structurally are one of the strongest ladders you can buy. Both feature heavy duty side rails and rungs that will not twist, turn, or break off. The rungs are 1¼" in diameter and deeply grooved to provide a non-slip surface.

The ladders cannot rust, rot, warp, splinter, cause sparks or burn. Extremely strong folding hooks are supplied on the Pumper Roof Ladder.

Aluminum Ladder Company ALCO-LITE

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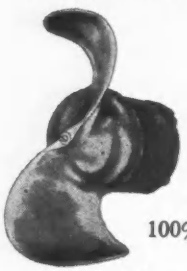

NOT JUST A FAN ... but a powerful vacuum-action air screw ... Super Vac is amazingly simple in operation, made possible by the efficient design of the **powerful propeller** that is the heart of the unit. This patented propeller produces 100% pulling or blowing power over its entire surface.

Proved method of saving lives while also reducing smoke damage

Fire departments **nation-wide** attest to the speed with which Super Vac provides **controlled ventilation** ... so necessary in modern fire fighting. This multi-purpose unit primarily (1) gets rid of smoke and fumes through its powerful vacuum action ... or, (2) furnishes a tremendous blast of fresh air into the smoke-congested area, reducing the dangers of combustion and asphyxiation. Although one unit is often sufficient, **complete controlled ventilation** can be more speedily accomplished by using two or more units ... one or more units **pulling out the smoke and fumes** while the remaining units **blow in a steady supply of fresh air.**

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Flows and Friction Loss

IF YOU want to double the flow through any line of hose of any length or size, merely multiply the friction loss by 3.6. Contrariwise, the flow may be cut in half by dividing the friction loss by 3.6.

For example, with 200 gallons per minute flowing there is 10 pounds friction loss per 100 feet of 2½-in. hose. Multiply the friction loss by 3.6 and at 36 pounds friction loss we have 400 gallons per minute flowing. If a 1½-in. line carries 60 gpm at 10 pounds then it will carry 120 gpm at 36 pounds. If a 3-in. hose carries 340 gpm at 10 pounds it will carry 680 gpm at 36 pounds.

If you only want to increase the flow 25 per cent just step up the friction loss by one-half. For example, if a 2½-in. line is carrying 140 gpm with 5 pounds pressure loss per 100 feet, a 50 per cent increase in pressure to 7.5 pounds will add 25 per cent of 140 or 35 gpm, giving a flow of 175 gpm. Or if a 1½-in. line is carrying 100 gpm at 25 pounds we can increase the flow to 125 gpm by revising the friction loss to 37.5 pounds which is a 50 per cent increase in pressure. Knowing some of these relationships will frequently be helpful in making quick estimates on the fireground.

Pressure Loss in 1½-inch Fire Hose

FOR several years we have had reports from various member fire departments indicating that pressure losses in 1½-in. fire hose are considerably less than what has been indicated in the published fire stream tables which have been in use for many years. This fact is important because of the increased use of 1½-in. fog nozzles.

Readers may recall that book values, based upon early tests with 1½-in. hose, indicate 33 pounds pressure loss in 100 feet of 1½-in. hose with 100 gallons flowing. Some fire departments have found that with pre-connected lines, pressure based upon the old book figures is excessive, making the lines more difficult to handle and subjecting the hose to needlessly high pressures. Recent tests with several different makes of 1½-in. hose indicate that with 100 gpm flowing

the friction loss averaged less than 26 pounds or nearly 25 per cent less than the book value. Of nineteen actual samples of various makes of hose tested in a laboratory, the friction loss varied from 22 to 29 pounds per 100 feet at 100 gpm.

Thus for practical fireground operations good results may be obtained by using a value of 25 pounds loss per 100 feet with 100 gpm flowing, 15 pounds at 75 gpm and 7 pounds with 50 gpm. It would be well for each fire department to conduct flow tests with its own 1½-in. hose. It may be that, when under pump pressure, the 1½-in. hose has an internal diameter slightly larger than the nominal 1½-in. ID and this together with a smooth waterway would result in the lower friction loss. Tests with lightweight lined standpipe hose having a relatively rough lining show losses at approximately the old book value. Another factor is that modern nozzles for 1½-in. hose are better engineered with adequate waterways so that the total pressure requirements for 1½-in. hose have been reduced. Several leading fire departments have already revised their formulas for 1½-in. hose. In one case the book value for 300 feet of hose is used for 400 feet of 1½-in. hose. In another case, the pump pressure for 200-foot pre-connected lines has been dropped from 150 to 125 pounds. This makes the lines easier to handle and supplies an 85 gpm fog nozzle at about 90 pounds on level ground or 80 pounds on the third floor.

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"BIG RED" MADE TURF HISTORY IN 1919-20!

THOUGH MAN O' WAR CAMPAIGNED ONLY AS A 2- AND 3-YEAR OLD, HE WON 20 OF 21 RACES...TO LATER BE NAMED "HORSE OF THE HALF CENTURY"!

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Sliding Pump Type

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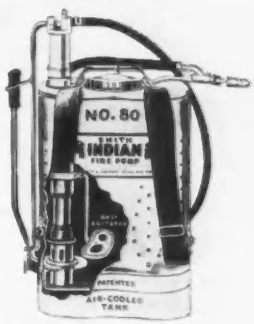
No. 80 INDIAN
Lever Type Pump and Handle



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IAFF Survey of Fire Fighters

IN PAID fire departments in the United States the fire fighter's chances of suffering a disabling work injury are almost 21 in 100. His chances of being killed on duty are nearly 30 times as great as those of workers generally.

These findings are reported in a special survey conducted by the International Association of Fire Fighters, AFL-CIO, and released by President William D. Buck and Secretary-Treasurer John C. Kabachus. The survey covered fire departments with a personnel of approximately 88,000, or 70 per cent of the approximately 125,000 full-time fire fighters in the country.

The average age of active fire fighters is just under 38 years. According to reporting fire departments, there were 288 deaths of active fire fighters during 1957, and data on the causes of death were received on 272. Fifteen per cent of these fire fighters died at the scene of a fire or from injuries received in fighting a fire, while 40 per cent died as a result of heart conditions. Other causes accounted for 45 per cent. Thus heart conditions were responsible for nearly three times as many deaths as were injuries received in fire fighting.

The survey also indicated that about 550 fire fighters were forced to give up active fire fighting work because of permanent injuries received in fire fighting or because of a heart condition or hypertension.

A FRONT MOUNT PUMPER for RURAL SERVICE

For rural fire fighting the Champion is ideal because with the pump mounted conveniently up front you can nose the truck into position for drafting water from ponds and streams otherwise inaccessible and you can keep the rear driving wheels on firm ground. With a front pump you can use the full pay load of the chassis frame for a larger booster tank.

If you have special fire protection problems you can call on us for recommendations, specifications, quotations. We will follow your requests and suggestions faithfully and you will be proud to accept delivery of your new Champion Fire Apparatus secure in the confidence that the unit will perform capably and serve well to protect your citizens and property.

You'll want to know all about our low cost finance plan or combination PURCHASE-RENTAL plan.

Write for Fire Apparatus Booklet and Fire Equipment Catalog

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1908 DARLEY'S 50TH YEAR 1958

"One if by Land Two if by Sea!"

MOST school children are aware that lanterns hung in the steeple of Boston's Old North Church warned Paul Revere which way the British "Red Coats" would march. They may not know that in the early days before fire alarm systems were invented more than a hundred years ago, bells in church towers were used for alarms of fire.

Hence it came to pass that firemen, who were good at climbing, were given the duty of attending to the church clocks and bell strikers, many of which were later arranged to be run by the fire alarm system.

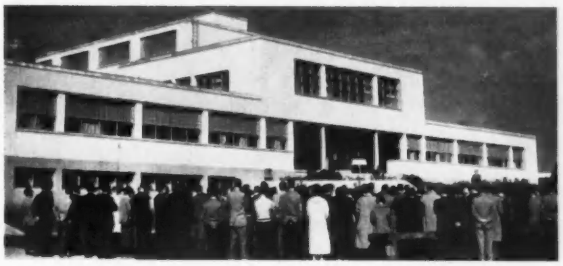
All of this is brought to mind by a routine Boston Fire Department order pertaining to the end of daylight saving time on October 26:

"All tower clocks without striking mechanism will be set back at 6:30 A.M. All tower clocks with striking mechanisms will be stopped at 6:30 A.M. for one hour and then started. Only men who are regularly assigned to wind clocks should be detailed to change tower clocks."

As far back as 1890, fire commissioners of Boston protested this archaic chore. Nevertheless, the practice continues, although the assignments have been reduced with the passing years. Someone, though, may find comfort in the fact that church clocks that once called bucket brigades are still being set for the changing times.

Now is the time to order FIREMEN magazine for all of your fire fighters! Join NFPA!

New Fire Research Building in Ottawa



THE first fire research building in Canada was officially dedicated in Ottawa on October 3. Shown above, the new laboratory forms a part of the Building Research Center of the National Research Council. It is located about six miles out of Montreal.

Built at a cost of about a million dollars, the new laboratory covers 20,000 sq. ft. and features a 40-ft. high laboratory housing two furnaces, one of which will be used for research into the fire resistance of wall structure. This furnace will accommodate 14- by 14-ft. panels to give a specimen test area of 12-ft. square. The other furnace is 12- by 15-ft. and will be used to test floor structures. Both furnaces allow specimen testing in accordance with either ASTM or BSI standard procedures.

The Building also has a chemical and physics laboratory, a special room for carrying out model burns and a space for research into hydraulics.

Prior to the dedication ceremonies, a two-day fire prevention and fire research conference was held in Ottawa. Fire service officials who attended included: (left to right) C. G. Burnett, former Chief of the city of Ottawa Fire Department and now a member of the Fire Section staff; Lieutenant N. Stewardson, Deputy Director of the Canadian Navy Fire Service; Horatio Bond, NFPA Chief Engineer; Flight Lieutenant A. McFadden, Officer Commanding the Fire School at Camp Borden of the Royal Canadian Air Force; Chief Maynard Dolman, city of Ottawa Fire Department; Chief H. Flannagan, Fire Department, Etobicoke Township, Ontario; Chief Arthur Burch, Fire Department, city of St. Catherines, Ontario; Martin Hurst, Deputy Provincial Fire Marshal of Ontario, Toronto; Squadron Leader B. C. Quinn, Fire Marshal, Royal Canadian Air Force at Ottawa; Chief F. Vivian, Fire Department, city of St. John's, Newfoundland; Lieutenant G. C. Ball, Assistant Director, Canadian Navy Fire Service, Ottawa; Chief F. G. Lauder, Fire Department, city of Edmonton, Alberta; Basil Nixon, Provincial Fire Marshal of British Columbia, Vancouver; Chief Ken Putman, Fire Department, city of Kitchener, Ontario; B. Aitken, Fire Prevention Officer, Canadian Department of Transport, Ottawa; Chief Ray Hobbs, Fire Department, city of Oshawa, Ontario.

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Model L-186 SPECIAL FIRE BODY

• Chrome posts and chrome railings • Recessed door handles; slam action catches; cylinder locks keyed alike; chrome plated • 11 gauge water tank with removable seats on top • thru compartment front compartments; l. & r. front compartments 26" deep • Diamond plate on compartment tops • Adjustable shelves in second vertical and rear vertical compartments • Rubber fenders on body; rub railing along body sides diamond plate • Chains on all vertical and horizontal doors • Cab step is optional extra • 5" channel understructure; 1/8" diamond plate flooring; 14 gauge throughout body; 19 gauge double-panel doors.

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Also a complete line of compact and versatile Fire, Fire-Crash, Rescue and Emergency Units and Special Built Fire Bodies. Finest materials and workmanship, extra-rugged construction and original modern design. Compartments arranged for handy stowage of fire fighting, first aid and life saving equipment, helmets, rain gear, tools, tanks, portable pumps and generators, etc.

Write for FREE Literature

New Chief in Mountain View

FIRE Chief Leslie K. Coon recently assumed duties as the first full-time paid fire chief in Mountain View, California. Chief Coon started his fire service career in the Menlo Park district of San Mateo County. He rose through the ranks from hoseman to engineer to captain in seven and one-half years, then he went to the city of Downey, California, to assist in the organization of a 60-man fire department. The Mountain View Fire Department protects a community of 33,000 persons and also operates in the outlying Fremont fire district which has 25,000 population in the suburban area. Construction has started on one new substation and sites are being selected for three more fire stations.

How's That You Say?

FOR the past couple of years, the Chicago chapter of the Society of Fire Protection Engineers has published an informative bulletin for its members. While the bulletin primarily contains extracts of technical articles on fire protection engineering, a recent issue had the following list of amusing definitions. Readers of FIREMEN are cautioned that the inclusion of these definitions in promotional examinations for fire department members is unlikely.

From Chi-Chapter-Chit-Chats

The following glossary of technical terms was submitted by Herr "Hermann" Asbury:

AUTOMATIC SPRINKLER: Das melten und schspitzen werke.

FIRE DOOR: Das schlidengeschlammen.

WATER MOTOR GONG: Das eargeschplitten clatterenwerke.

FUSE LINK: Das meltenschsplitten und droppen der fingerenmascher.

FIRE HOSE: Das schnaken und schspitzen.

FIRE BRIGADE: Das rushen geblazer putoudten gruppe.

FOAM: Das frothenbubblen schnuffen stuffen.

CARBON DIOXIDE: Das whooshin-whiten schnuffen stuffen.

SMOKE DETECTOR: Das schmellen und tellen werke.

FLAMMABLE LIQUID: Das laudenboomen juicen.

INSPECTORS: Der schnoopenschniffers.

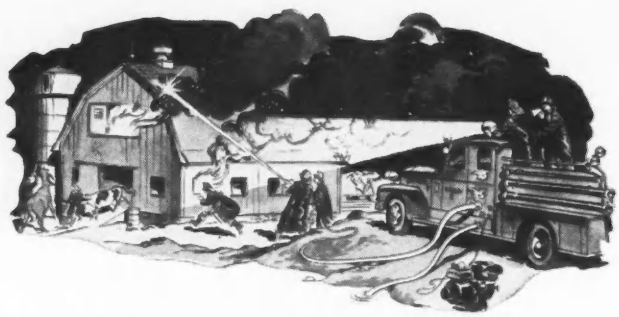
Correction!

In the article on hose thread standardization which appeared in the November issue of FIREMEN magazine, the city of Oshkosh, Wisconsin, was listed as having a non-standard 2½-in. fire hose coupling with a 3⅛-in. outside diameter and 7 threads per inch. Chief Otto M. Stoegbauer, who heads the Oshkosh Fire Department, writes to report that all city hydrants, fire department hose and fittings, private hydrants, pipes and fittings, were converted to National Standard thread dimensions some time ago.

Jersey City Pictures?

Warren C. Zapp, well known photographer of fire department action, is now preparing a history of the Jersey City, New Jersey, Fire Department, to be called "Inside the Fire Lines." Currently, he is trying to collect photographs of fires that occurred in Jersey City in years gone by and he has asked if any readers of FIREMEN magazine happen to have such photographs. Correspondence should be directed to Warren C. Zapp, 40 Randolph Avenue, Jersey City, New Jersey.

KOHLER ELECTRIC PLANTS



Independent power for fire-fighting, civil defense

Volunteer and municipal fire departments rely on compact, portable Kohler electric plants for floodlights, power tools. Models for emergency service maintain communications, alarm signals, when normal power is interrupted.

Civil defense units specify Kohler plants for floodlights, mobile hospitals, power tools, amplifiers, air-raid sirens. Sizes: 500 watts to 100 KW gasoline, 10 KW to 100 KW diesel. Write for folder B-49.

Model 1.5M25, *1500 watts, 115 volt AC. Manual start.*

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Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings
Electric Plants • Air-cooled Engines • Precision Controls

Fire Protection in Dollars and Cents

THE value of good fire protection as reflected by the experience of cities having good fire insurance gradings is clearly indicated in the loss experience of Oregon cities as shown by the published reports of the State insurance commissioner. The actual ratio of loss to sound value at risk over a five-year period is based upon $60,071,740 fire losses (excluding sprinklered properties and automobile fires) and $1,058,596,283 value exposed to fire, as follows:

Insurance Classification of Cities	Loss Ratio
2	$2.81
4	2.47
5	4.34
6	4.66
7	6.44
8	7.44
9	8.68
10	18.44

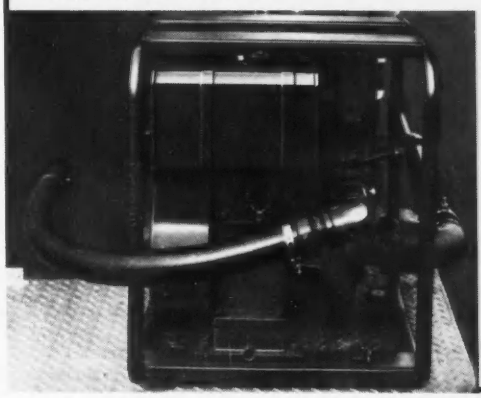
From this we find that if class 2 and class 4 cities (those having less than 2,000 deficiency points in their fire defense gradings) had the same loss ratio as class 5 and class 6 cities (those having 2,001 to 3,000 deficiency points) their losses could have been some $9,420,000 greater during the five-year period. If their loss record had been commensurate with the places having 9th or 10th class protection (over 4,000 deficiency points) their losses would have been over $58,000,000 larger. Contrariwise, if cities of 5th and 6th classes had loss experience commensurate with the best protected cities, their losses could have been reduced over 38 per cent with a saving of $3,400,000 which would have bought a lot of fire protection. If cities of 7th and 8th classes had fire records equal to those of cities with 1,000 less deficiency points, their fire losses would have been reduced by more than one-third.

This experience, aside from the fact that the best protected communities enjoy the best gradings for fire insurance rates, indicates quite convincingly that money spent on good fire protection is clearly reflected in more favorable loss experience. Thus, there can be little question that lives and property are saved by the maintenance of good fire protection.

NEW HALE Type FZZ Pumping Solid Stream and Fog Thru 1½" Lines

Picture at right shows one of the many useful ways the new light-in-weight Hale FZZ (or FZ) can work for you. Each of these portable fire pumping units weighs only 148 lbs.

Picture below shows the portable Hale FZZ (from Discharge Side) neatly installed on running board of pumper. Discharge runs into Booster Line.



An FZZ (or FZ) can be easily detached to fight fire direct; as standby pump; or to supply larger pumper from source of water inaccessible to large apparatus.

An FZZ will supply from draft 2 capable fire streams through long 1½" lines. Performance substantially exceeds NFPA capacity and pressure requirements.

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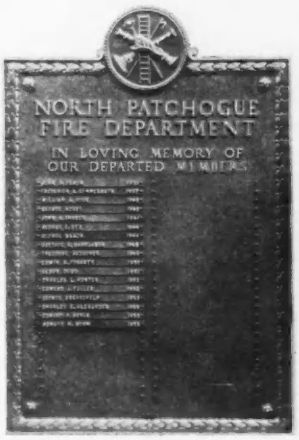

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SECRETARY'S RECORD BOOKS
LOOSE-LEAF FIRE RECORD BOOKS
SECRETARY'S BLANK FORMS

Write for Catalog 350

CAIRNS & BRO., Inc. — Allwood, Clifton, N. J.

SINCE 1836

Little things with BIG VALUE...

Truck built by Universal Fire Apparatus Corp. of Logansport, Ind.

The numerous mysterious, glistening "gadgets" on a fire truck impress the average layman — but the "pro" knows that each one is the product of long, painstaking research and design. Each "gadget", whether it's a gauge, valve, coupling, or nozzle or "what have you", has a vital part in the function of fire fighting and is a valuable asset for efficiency.

The FEDERAL Class Q siren and famous Beacon Ray light on this fire truck are not ornaments put there to impress the public. These are super warning signals included to insure safe fast arrival of this vital equipment at the scene.

Don't reduce the efficiency and value of your fire apparatus with inadequate signals — specify FEDERAL. Don't gamble all the rest when only a few more dollars buy the best. Ask for catalog 300 on FEDERAL sirens and lights.

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SIGN and SIGNAL Corporation

New Chief in Alameda

RECENTLY appointed as Chief of the Alameda, California, Fire Department, was William L. Hilbish, a veteran of 22 years service in the department. Since Chief Hilbish's appointment on July 1, the Alameda Fire Department has been reorganized with the addition of two battalion chiefs and the expansion of the Fire Prevention and Training Division. A new fire photography group is functioning and firemen are being trained for camera work and developing and printing in the department's laboratory. Another new unit is the cadre of firemen who make up a speaker's bureau and who are now receiving formal training in public speaking.

New Instructor in Illinois

SAMUEL EVERETT CROW, former Battalion Chief and Fire Department instructor in Decatur, recently joined the University of Illinois staff. He will be an extension instructor in firemanship, assisting Prof. R. K. Newton and Joseph I. Fetters in presenting training courses throughout the state for full-time and volunteer fire fighters.

A native of Decatur, Crow attended Decatur High School and Brown's Business College, and is a graduate of the Purdue University Fire Instructors' Training School, where he specialized in arson investigation. He joined the Decatur Fire Department in January, 1938, and retired September 30, 1958, after more than 20 years' service.

Correspondence Wanted!

W. T. Mount, a member of the Toronto, Ontario, Fire Department, would like to exchange correspondence with professional fire fighters from "anywhere in the world."

FIREMEN!
INCREASE YOUR INCOME!

Convert your spare time into steady income selling most popular line of Belts and Buckles with Fireman's personal initials, first name or nickname with miniature replicas of actual fire equipment beautifully enameled, also lapels, tie clasps, key chains, money clips, and cuff links. Excellent repeat business. We furnish you with FREE complete sales kit. Really nice part-time money producing items.

NO INVESTMENT NECESSARY!

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P.O. Box 1425F Providence, R. I.

This year's NFPA Fire Prevention Week poster was put to good use by several fire departments who duplicated the illustration with actual persons. At left, Inspector Warren R. Kirk of the Providence, R. I. Fire Prevention Bureau poses with his children, Russell, 10, and Karen Sue, 12. At right, Barbara Russell and Fire Fighter W. T. Norman of the Atlanta, Georgia, Fire Department, use an animated Sparky mannequin to recreate the poster. *(Providence FP Bureau and Atlanta Fire Dept. photos.)*

Sparky... GETS AROUND!

(Right) The Marine Corps Recruit Depot, Parris Island, S. Car. last year had a number of successful fire prevention programs, including a "Sparky Junior Fire Inspector Week." Here Major General Robert B. Luckey, Commanding General of the Depot, receives a badge and helmet from Sparky and youngsters. *(Marine Corps photo.)*

(Left) At the RCAF Station, Chatham, New Brunswick, the Dalmation mascot with a Sparky helmet takes his driving seriously. Watching is Flight Sergeant Les Duguid. *(RCAF photo.)*

(Right) The Wisconsin State Fire Chiefs Association set up this exhibit at the State Fair. Over 100,000 persons visited the display and children were signed up for Sparky's Fire Department. Some 71 firemen worked at the exhibit.

SINCE Sparky's Fire Department was started by the NFPA in 1954 its membership has grown steadily. More than 100,000 children from Alaska to Texas, Maine to California and from a dozen countries have joined as individual members. There are about 260 groups that have taken membership in Sparky's Fire Department to promote fire prevention education for youngsters. These include units in Mexico, Puerto Rico, Canada, Europe and military and government installations in the Pacific.

Since first chosen as a symbol for fire safety by the NFPA Sparky has become a national figure and has been particularly useful to fire departments in developing interesting programs of fire prevention for youngsters. More than a million Sparky inspection blanks have been distributed by NFPA within the past two years. (For full details on membership, write to Sparky's Fire Department, Boston 1, Massachusetts.)

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32 PAGE CATALOG TO Dept. F-12

NIELSEN • RIONDA INC.
40 JOHN ST., NEW YORK 38, N. Y.

"Grab a bucket, Stello — the firemen will do the yelling."

New Officers in Minnesota

RECENTLY elected as officers of the Minnesota State Fire Chiefs' Association were: Chief Walter R. Berg, White Bear Lake, president; Chief John Barry, St. Paul, vice-president; and Chief Bruce Timperley, of Fridley, secretary-treasurer.

The Association has hopes of establishing a permanent training school at the University of Minnesota and to increase the scope of the firemen's training program.

New Members

NFPA Welcomes the following chiefs and fire departments who recently joined the Association. To date 24,519 fire fighters are receiving FIREMEN.

British Columbia: Kelowna Volunteer Fire Department, Kelowna.

California: Fairfield Fire Department, Fairfield; Rialto Fire Department, Rialto; San Gabriel City Fire Department, San Gabriel.

Connecticut: East Hartland Volunteer Fire Department, East Hartland.

Florida: St. Petersburg Beach Fire Department, St. Petersburg Beach 6.

Maryland: Federalsburg Volunteer Fire Company, Inc., Federalsburg.

Massachusetts: Cambridge Fire Department, Cambridge; Chief Walter Leonard, Townsend Fire Department, Townsend.

Minnesota: Clarkfield Fire Department, Clarkfield; Pelican Rapids Fire Department, Pelican Rapids; Tintah Volunteer Fire Department, Tintah.

New Hampshire: Walpole Fire Department, Walpole.

New York: Elsmere Fire District, Delmar.

Ohio: Coventry Township Fire Department, Akron 19; Chief Virgil E. Botiller Evendale Fire Department, Morrow; North Fairfield Volunteer Fire Department, North Fairfield; Pleasant Hill Volunteer Fire Department, Steubenville.

Oregon: Wasco County Volunteer Fire Department, Zone 2, The Dalles.

Pennsylvania: Chief Edward Hutchinson, Greensburg; Lincoln Park Volunteer Fire Department, Pittsburgh 6.

South Dakota: Jefferson Volunteer Fire Department, Jefferson.

West Virginia: Clarksburg Fire Department, Clarksburg; Moorefield Volunteer Fire Company, Moorefield; Chief O. E. Stump, Jr., Whitesville Fire Department, Inc., Whitesville.

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FIRE HOSE DRYER

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- Dries Hose in a Few Hours
- NO Radiant Heat — Can't Injure Hose
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- Keeps ALL Hose Ready for Service
- Reduces Station Construction Cost

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1 — Mack City Service Hook & Ladder Truck

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Contact: **Robert Weiss, Sec.**

SMITHTOWN FIRE DISTRICT
100 Elm Avenue
Smithtown, L.I., N. Y.

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this month's

EQUIPMENT NEWS

William S. Murray, Jr., member of NFPA Committee on Fire Hose, is now Director of Sales of the Fire Hose Division of *Goodall Rubber Company*, Trenton, New Jersey. . . . Here is a new, ingenious device that will open a locked car within 30 seconds without damage: The Lenko Car Opening Tool, made by *Lenko, Inc.*, 209 Washington Avenue, Minneapolis 1, Minnesota. . . . Emergency rescue and fire support truck bodies are becoming well known specialities for *Reading Body Works, Inc.*, 420 Gregg Avenue, Reading, Pennsylvania. . . . Industrial plant fire brigades can keep fire hose nozzles free from lint and textile fibres by wrapping with Saran Wrap, a clear plastic film made by *Dow Chemical Company*, Midland, Michigan.

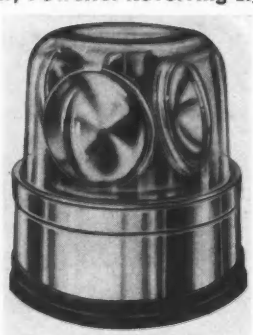
Weather conditions affect your operations? You may be interested in a new portable weather radio, "Weatherman Slim-Six," 1½-in. thick by 3½-in. high, with one band for standard AM broadcast and CAA 200–400 kc weather band. Contact *T. L. Labs*, 1113 Pine Street, Waukegan, Illinois. . . . Now, neckties that don't flap in the wind but stay neat and straight are available. Get the facts on "Button-Down Tie" for dress and regular wear from *A. Schreter and Sons, Company*, 16 South Eutaw Street, Baltimore 1, Maryland. . . . *Howe Fire Apparatus Company*, Anderson, Indiana, announces two new distributors for their apparatus: *Capitol Fire Equipment Company*, 2004 Capitol Avenue, Sacramento 8, California, for the entire state of California, and *Mr. Earl Morse*, Newton, New Hampshire, for New Hampshire and Maine.

Three new portable centrifugal pumps, the "300" series with capacities of 18,000 gallons per hour, are announced by *Homelite, Division of Textron, Inc.*, Port Chester, New York. . . . Gene Wheeler

"Chief" Power Megaphone

A new, 3¼-pound, transistorized power megaphone, the "Chief," is claimed to be the lowest priced unit with ¼-mile voice range on the market. Write *Falcon Alarm Company, Inc.*, 243 Broad Street, Summit, New Jersey.

New, Powerful Revolving Light



A new 360° revolving light for vehicles, combines conventional red revolving lights with high intensity white light. The "Sky-Lighter" gives visual warning to all traffic and actually illuminates the vehicle on which it is mounted. Write to *Sireno Company, Inc.*, 214 William Street, New York 38, New York.

Catalog on Inhalators

A new six-page brochure, "Scott Demand Inhalators," describes the Type A and Type B Scott oxygen inhalators and accessories available for each. The many features of Scott Demand Inhalators — the simplicity of operation, the demand principle and the constant flow availability "at the touch of a button" — are all described in detail. The use of the Inhalator by fire departments, highway police, ambulance service, industrial plants, nurses and doctors are all illustrated. Copies of this informative brochure may be obtained by writing to *Scott Aviation Corporation*, 236 Erie Street, Lancaster, New York.

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